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ABSTRACT

A multi-functional apparatus and method for drilling fluid and cementing operations to set casing in a wellbore for use on either top drive or rotary type rigs. The apparatus and method includes a fill-up and circulating tool, a cementing head assembly, and a wiper plug assembly. The fill-up and circulating tool comprises a mandrel with a sealing element disposed about the outside diameter of the mandrel. The cementing head and wiper plug assemblies are useable on any fill-up and circulating tool capable of being inserted into a casing. To fill the casing, the assembly is lowered from the rig such that a portion of the fill-up tools inserted into the casing, the pumps are then actuated to flow fluid into the casing. To circulate fluid, the tool is lowered further such that the sealing element sealingly engages the inside diameter of the casing to allow fluid to flow through the casing, into the wellbore, and back to the fluid pumps. To cement the casing, the cement pump and hose assembly is connected to the cementing head to allow cement to be pumped through the fill-up and circulating tool and into the casing string. A cement plug assembly comprising a plurality of wiper plugs is connected to the outlet of the fill-up and circulating tool. The wiper plugs are then released at a predetermined time during the cementing process to provide a positive seal at the bottom of the casing string.